

Two new species of Caecidae from the Indo-Pacific (Gastropoda)

Mauro Pizzini* (✉), Italo Nofroni# & Antonio Bonfitto°

* Largo della Caffareletta 6, 00179 Roma, Italy, pizzini.mauro@gmail.com, (✉) corresponding author

Via B. Croce 97, 00142 Roma, Italy, italo.nofroni@uniroma1.it

° Università di Bologna, Dipartimento di Biologia Evoluzionistica Sperimentale, Via Selmi 3, 40126 Bologna, Italy, bonfitto@alma.unibo.it

Abstract

Two species of the family Caecidae are described as new from the Indo-Pacific: *Caecum varanoi* n. sp. and *Caecum smriglioi* n. sp. Among the other Indo-Pacific congeners, *Caecum varanoi* n. sp. is only comparable to *C. heterapex* Habe, 1963, with which it has been confused. Although a single specimen of *Caecum smriglioi* n. sp. was found, the new species is proposed on the basis of its unique morphological characters, allowing it to be clearly distinguished from all the others Indo-Pacific ringed caecids so far known.

Riassunto

Vengono descritte due nuove specie della famiglia Caecidae, *Caecum varanoi* n. sp. e *Caecum smriglioi* n. sp., per l'Indo-Pacifico. Tra le altre specie indopacifiche, *Caecum varanoi* n. sp. è confrontato con *Caecum heterapex* Habe, 1963, con il quale la nuova specie è stata finora erroneamente identificata. *Caecum varanoi* n. sp. è caratterizzato da un setto uncinato lateralmente, unico nel suo genere, e da anelli concentrati nella zona aperturale ed apicale. Sebbene di *Caecum smriglioi* n. sp. si conosca un solo esemplare, la nuova specie possiede caratteri così peculiari da risultare inconfondibile nell'ambito dei Caecidae indopacifici a scultura anulare attualmente noti. Essa presenta un'appariscente scultura anulare su tutto il tubo ed un setto vistosamente acuminato. Essa è confrontata con *Caecum sepimentum* de Folin, 1868, *C. vertebrae* Hedley, 1899, *C. clarum* Folin in Lamy, 1909 e *C. heterapex* Habe, 1963, le specie più affini dal punto di vista morfologico.

Key words

Gastropoda, Caecidae, systematics, new species, Indo-Pacific.

Abbreviations

AMS = Australian Museum, Sydney (Australia); MNHN = Muséum national d'Histoire naturelle, Paris (France); MZB = Museo di Zoologia dell'Università di Bologna (Italy); NSMT = National Science Museum, Tokyo (Japan); ZSM = Zoological State Collection Munich (München, Germany); MPR = Mauro Pizzini, Roma (Italy); leg. = collected by; es = empty shell(s), without soft parts and/or operculum; ph = type material examined through photos (NHML, AMS, NMST); max. diam. = maximum diameter; min. diam. = minimum diameter.

Introduction

For the last few years, two of the present authors (Pizzini & Nofroni) have been dealing with the systematics of the family Caecidae in the Lusitanian (Mediterranean and Atlantic), West Africa and Indo-Pacific areas. Recently, a large work of revision of the South-West Pacific caecids, based on material from the MNHN Oceanographic Expeditions (1976-2000), was brought to terms. More recently, other material coming from the Indo-Pacific was obtained in addition to material from AMS, that is still being studied. Two new species with peculiar morphological characters, found in this material, are described separately in the present work.

Systematics

Class Gastropoda Cuvier, 1797
Superfamily Risssooidea Gray J.E., 1847
Family Caecidae Gray J.E., 1850
Genus *Caecum* Fleming, 1813

Caecum varanoi sp. nov.

Fig. 1 A-F

Caecum heterapex Habe, 1963 *sensu* Hasegawa, 2000: p. 171, pl. 85, fig. 4.

Type material

Holotype (AMS C415402 - n.000384C) (length 3.2 mm, min. diam. 0.5 mm, max. diam. 0.6 mm) from the type locality. Paratype A (AMS C415409 - n.000382C) (length 3.3 mm, min. diam. 0.5 mm, max. diam. 0.6 mm, 42 rings), Papua-New Guinea, Port Moresby, Ela Beach, 1 es, 9°29.000' S, 147°9.000' E, beach, 1956, leg. J.S. Colman & T. Iredale. Paratype B (AMS C415411 - n. 000382C, broken), Papua-New Guinea, Port Moresby, Ela Beach, 9°29.000' S, 147°9.000' E, beach, 1956, leg. J.S. Colman & T. Iredale. Holotype and paratypes A and B in AMS.

Type locality

Papua-New Guinea, Milne Bay (about 400 Km East of Port Moresby), 10°23.000' S, 150°25.000' E.

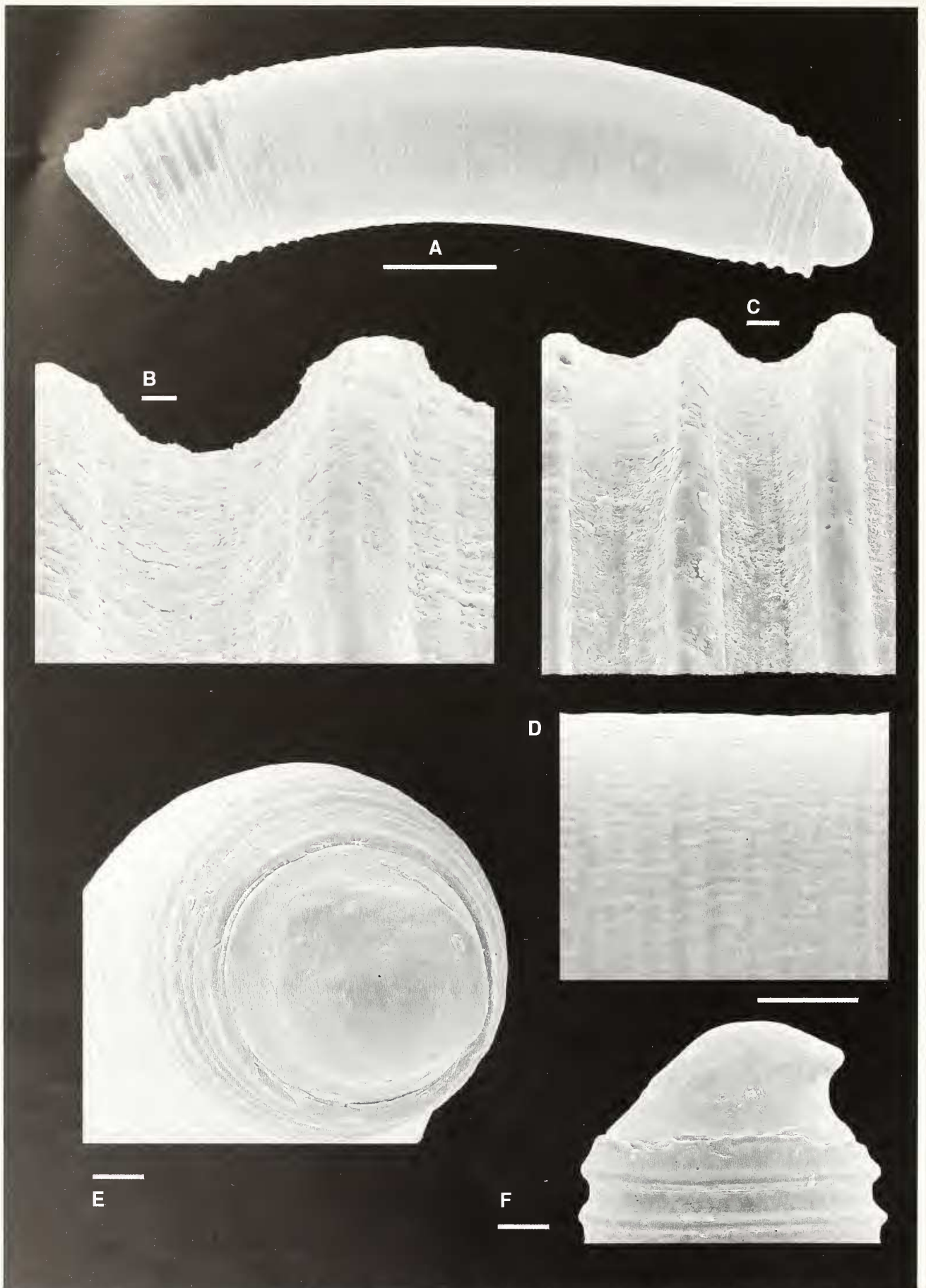


Fig. 1 A-F. *Caecum varanoi* n. sp., holotype: **A.** shell (scale bar = 500 µm); **B.** detail of microsculpture near the aperture (scale bar = 10 µm); **C.** detail of microsculpture near the septum (scale bar = 50 µm); **D.** detail of microsculpture in the middle part of the tube (scale bar = 100 µm); **E.** septum, apical view (scale bar = 100 µm); **F.** Septum, ventral view (scale bar = 100 µm).

Fig. 1 A-F. *Caecum varanoi* n. sp., olotipo: **A.** conchiglia (scala = 500 µm); **B.** dettaglio della microscultura in prossimità dell'apertura (scala = 10 µm); **C.** dettaglio della microscultura in prossimità del setto (scala = 50 µm); **D.** dettaglio della microscultura sulla parte centrale del tubo (scala = 100 µm); **E.** setto, veduta apicale (scala = 100 µm); **F.** setto, veduta ventrale (scala = 100 µm).

Other material

Caecum heterapex Habe, 1963 holotype (ph) (broken), Mo 39925 (NSMT); *Caecum heterapex* Habe, 1963 *sensu* Hasegawa K. (2000; pl. 85, fig. 4), 1 es, near Amami Oshima, Kyushu Isl. (Japan), in beach drift, leg. K. Sakurai, Mo 73566 (NSMT); *Caecum varanoi*, 3 es (all worn) 3 m, Freedom, Phuket Is. (Thailand), leg. I. Nofroni, 04/1995, (MPR); *Caecum varanoi*, 1 es, Tutuila Isl. (American Samoa Islands), beach along the Pago-Pago Airport, leg. Don Barclay, 06/2003 (ZSM); *C. cfr varanoi*, 1 es, in the middle of Vaisala Lagoon, Western Samoa Isl., 4 m, under dead branch coral plate (ZSM).

Description

Shell medium sized for genus (length 3.3 mm; diameter 0.5-0.6 mm), slightly curved, clearly subcylindrical in the adapical part, then regularly cylindrical, with about 42 somewhat raised, regularly spaced, transverse rings, stronger at periphery of shell, weaker or rather obsolete in the center (Paratype A), separated by interspaces nearly wide than rings. Under SEM, intervals with longitudinal, irregular, very fine microstriae, extending to tip of ribs. Aperture bell-shaped toward the inner side, without swelling, with 4-5 strong rings. Septum strongly protruding over cutting plane. Peculiar mucro, tongue-like, oriented towards right side at about 25°-30° in ventral view, with deeply concave dorsal margin. Shell yellowish in color. Operculum and soft parts unknown.

Distribution

Papua-New Guinea, Japan, Thailand and Samoa Islands.

Derivatio nominis

This species is named after Gerardo Varano (Rome, Italy), first Author's friend.

Remarks

Habe (1963) introduced *Caecum heterapex* from Amami Island (Kyushu, Japan) without providing any illustration. Subsequently, in 1978, the same Author published a picture of this species which neither shows resemblance with the holotype stored in NSMT (Fig. 2 E), nor corresponds to the original description (Pizzini et al., submitted). This picture was re-figured, as a drawing, by Kato (1990) as *Caecum heterapex* Habe, 1963. Higo et al. (2001) illustrated the type of *Caecum heterapex* (NSMT - 39925), which appears broken and ruined by Byne's disease (shell corrosion due to acid vapours), but clearly belonging to *Caecum clarum* Folin in Lamy, 1909 (Pizzini et al., submitted). Hasegawa (2000: p. 171, fig. 4), in his revision of the molluscs from Japan, quoted as *Caecum heterapex* Habe, 1963, a specimen evidently not belonging to Habe's species, but to the species here described. *Caecum varanoi* n. sp. is somewhat similar to *Caecum clarum* (Fig. 2 F) in tube shape and sculpture pattern, but it

differs from the latter by its peculiar shape of the septum, a smaller number of rings (30 vs 42), the subcylindrical shape of the adapical part of tube and larger size. As in many other species of the family Caecidae (Absalão et al., 2002: p. 171), the sculpture of the tube can be completely or partly lost. *Caecum varanoi* n. sp. shows a strong ringed sculpture only on the first and last parts of the tube, while it is almost absent in the middle part.

Caecum smriglioi sp. nov.

Fig. 2 A-C

Type material

Holotype in MZB, from the type locality, length 4.00 mm; max. diam. 0.95 mm, leg. C. Smriglio

Type locality

Hikkaduwa (Sri-Lanka), SW coast, about 200 km South of Colombo, 4 m depth, sandy bottom.

Other material

Caecum sepimentum Folin, 1868, 23 syntypes from Mauritius and La Réunion (MNHN), and hundreds shells from all through the Indo-Pacific. *Caecum heterapex* Habe, 1963, holotype, Ankyaba, Kakeroma-Jiima, near Amami-Oshima, Japan (NSMT). *Caecum clarum* Folin in Lamy, 1909, 55 syntypes, Nossibé, Madagascar (MNHN).

Description

Shell medium sized for genus (length 4 mm; max. diam. 0.95 mm), slightly curved, slightly subcylindrical only towards the adapical side, then perfectly cylindrical to the end, with about 23 strongly raised, acute, almost lamellar rings, with deep U-shaped interspaces, nearly wide as rings, giving a characteristic wavy outline, with a sinuous shape of the rings from the adapical part of the tube to the half of its length. Interspaces with very fine, longitudinal, worm-like microstriae extending to rings. Aperture large, with outer swelling, with 5 thin rings. Septum slightly recessed, with a pointed mucro usually oriented to the right side at 30° to 40°. Shell milk-white in color. Operculum and soft parts unknown.

Distribution

The species is currently known only from Sri-Lanka.

Derivatio nominis

This species is dedicated to Carlo Smriglio (Rome, Italy), an old malacological friend, who supplied us with the *Caecum* specimen.

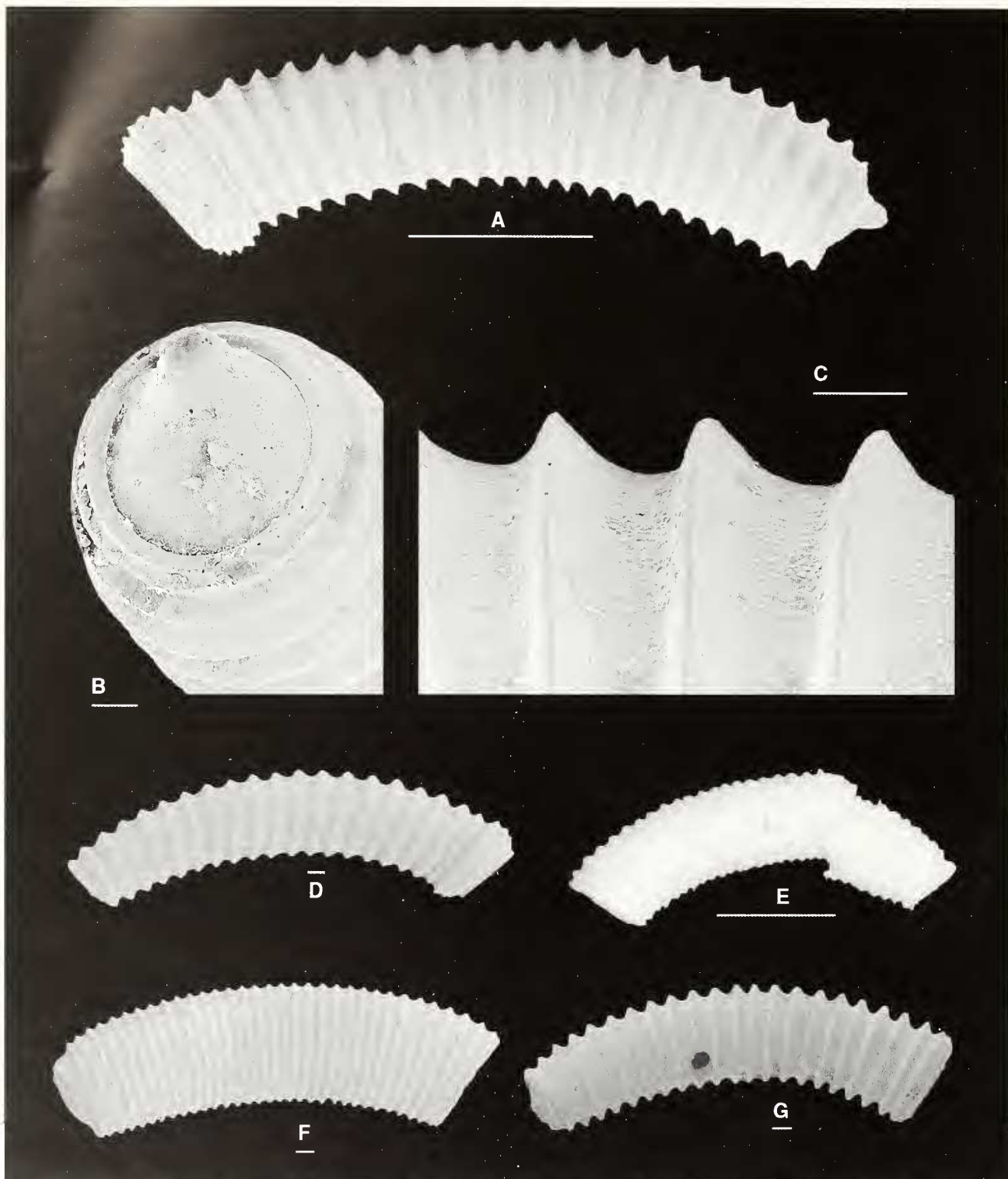


Fig. 2. A-C. *Caecum smriglioi* n. sp., holotype: **A.** entire shell (scale bar = 1 mm), **B.** septum, apical view (scale bar = 100 µm), **C.** detail of microsculpture (scale bar = 100 µm); **D.** *Caecum sepimentum* Folin, 1868, Passe de Touho, New Caledonia (scale bar = 100 µm); **E.** *Caecum heterapex* Habe, 1963, holotype, Ankyaba, Kakeroma-Jima, near Amami-Oshima, Kyushu Isl., Giappone, (scale = 1 mm); **F.** *Caecum clarum* Folin in Lamy, 1909, Anse de Koumac, New Caledonia (scale bar = 100 µm); **G.** *Caecum vertebrale* Hedley, 1899, Passe de Touho, New Caledonia (scale bar = 100 µm).

Fig. 2. A-C. *Caecum smriglioi* n. sp., olotipo: **A.** conchiglia (scala = 1 mm); **B.** setto, veduta apicale (scala = 100 µm); **C.** dettaglio della microscultura (scala = 100 µm). **D.** *Caecum sepimentum* Folin, 1868, Passe de Touho, Nuova Caledonia (scala bar = 100 µm); **E.** *Caecum heterapex* Habe, 1963, olotipo, Ankyaba, Kakeroma-Jima, near Amami-Oshima, Kyushu Isl., Giappone, (scala = 1 mm); **F.** *Caecum clarum* Folin in Lamy, 1909, Anse de Koumac, Nuova Caledonia (scala = 100 µm); **G.** *Caecum vertebrale* Hedley, 1899, Passe de Touho, Nuova Caledonia (scala = 100 µm).

Remarks

The new species can be easily distinguished on the basis of its wavy outline due to the sharp, somewhat lamellar rings and the microsculpture pattern. Among the Indo-Pacific ringed species, only *Caecum sepimentum*

Folin, 1868, *C. vertebrale* Hedley, 1899, *C. clarum* Folin in Lamy, 1909 and *C. heterapex* Habe, 1963 show resemblances with *C. smriglioi* n. sp. *Caecum sepimentum* (Fig. 2 D) and *C. vertebrale* (Fig. 2 G) share the sculpture outline of *C. smriglioi* n. sp., but the rings are more rounded. Furthermore, the microsculpture is less marked. In

C. sepimentum and in *C. vertebrale* the septum is dome-shaped, more or less protruding, while *C. smriglioi* n. sp. has a pointed mucro, turned to the right side. The new species differs from *C. clarum* (Fig. 2 F) and *C. heterapex* (Fig. 2 E) in the h/D ratio, the swollen aperture and the different septum shape, more squashed in *C. clarum* and *C. heterapex*. Occasionally, some specimens of *C. clarum* have lamellar rings, similar to those of *C. smriglioi* n. sp., but the presence of a well impressed microsculpture makes the latter definitely different from Habe's species.

Acknowledgments

We wish to thank Kazunori Hasegawa (NSMT) who sent us photos of the type material of *Caecum heterapex* and for supporting us with bibliography, Philippe Bouchet and Enrico Schwabe which allowed us to study material stored respectively in MNHN and ZSM. We are also grateful to Alia Tabasam, Bruno Sabelli and Genny Checchi for revising the English text.

References

- ABSALÃO R.S. & PIZZINI M., 2002. Critical analysis of subgeneric taxa of the Subfamily Caecinae (Caecidae: Caenogastropoda). *Archiv für Molluskenkunde*; **131** (1-2): 167-182.
- HABE T., 1963. Eight minute species from Amami Islands far South of Kyushu including six new species. *Venus, Japanese Journal of Malacology*; **22** (3): 229-239.
- HASEGAWA K., 2000. Caecidae, in Okutani T. (ed.), Marine Mollusks in Japan. Tokyo, Tokai University Press, 1173 pp. [in Japanese].
- HIGO S., CALLOMON P. & GOTO Y., 2001. *Catalogue and bibliography of the Marine shell-bearing Mollusca of Japan. Gastropoda. Bivalvia. Polyplacophora. Scaphopoda*. Type figures. Osaka, Elle Scientific Publications, 208 pp.
- KATO S., 1990. Discussion on Caecidae. *Hitachiobi (The Reports of the Tokyo Malacological Society)*; **56**: 8-21 [in Japanese].
- LAMY E., 1909. Coquilles marines recueillies par M. F. Geay à Madagascar (1905). *Mémoires de la Société Zoologique de France, Paris*; **22**: 299-346.